

Customer No.: 31561
Docket No.: 21399-US-PA
Application No.: 10/826,176

REMARKS

Present Status of the Application

Claims 1-20 are rejected. Specifically, claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pommer et al. (U. S. Pub. 2003/0201462; hereinafter Pommer). Claims 1-20 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Fundamental Features in Discussion

1. With respect to claims 1 and 10, the present invention, as shown in FIG. 1, includes at least the features of two sets of alignment keys. One set of alignment keys 17 are implemented on one surface of the substrate 11 while another set of alignment keys 23 are implemented on the optical active component 20. In other words, the alignment keys 17 and 23 are used to precisely mount the optical active component 20 to the substrate 11. The two sets of alignment keys 17 and 23 are relating between the substrate 11 and the optical active component 20 themselves, but not the other elements. The features are recited in claims 1 and 10. The two sets of alignments keys 17 and 23 are aligned for assembling or disposing the optical active component 20 onto the substrate 11.

2. With respect to claims 8 and 19, further shown in FIG. 5, the guide rods 18 can be further formed on the surface of the substrate 11. Since the guide rods 18 are implemented on the surface of the substrate 11, the guide rods 18 are fixed on the substrate 11, but not held by other element.

It should be also noted that the guide rods 18 are different from the alignment keys 17 and

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23 as recited in claims 1 and 10 in the objects it connects.

Discussion of Claim Rejections under 35 USC 103

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pommer. Applicants respectfully traverse the rejections for at least the reasons set forth below. Further, claim 21 (actually is claim 1) in previous response is a typographic error.

1. As discussed above and further shown in FIG. 1, the substrate 11 has the first set of alignment keys 17. The optical active component 20 itself has the second set of alignment keys 23. The two sets of alignment keys 17 and 23 are particularly used to align the optical active component 20 to the substrate 11 during the assembling process. In other words, the optical active component 20 is a separate structure from the substrate 11 before being assembled.

2. Further, as shown in FIG. 5 and recited in claims 8 and 19, the guide rods 18 protrude from the substrate 11 so as to align the substrate 11 to an external connection object, such as the connection set 191 and the fiber connector 192.

3. It is evidenced that the two sets of alignment keys 17 and 23 are used to align the optical active component 20 to the substrate 11 in assembly. The guide rods 18, separate from the alignment keys 17 and 23, are fixed on the substrate 11, so that the substrate 11 is connected to the external connecting set 19 associating with the guide rods 18. The guide rods 18 and the alignment keys 17 and 23 are independent alignment members.

4. With respect to independent claims 1 and 10, in Pommer, the guide pins 72 and cutout areas 61 have been referred as the alignment keys 17 and 23 of the present invention (page 3 of Office Action). Applicants respectfully disagree.

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As shown in Fig. 1 and Fig. 5A, the guide pins 72 are the pins held by the recesses 79 of the support block 70 (Para. [0223]). The guide pins 72 are not on the surface of the substrate 17. The guide pins 72 penetrate through the substrate 17, not equally disclosing the alignment keys 17 and 23 of the present invention as recited in claims 1 and 10. Indeed, independent claims 1 and 10 recite the features of the alignment keys without limiting the guide rods 18. The guide rods 18 are further recited in dependent claims 8 and 19 as the separate members from the alignment keys 17 and 23 in the present invention.

Actually, the guide pins 72 of Pommer are used to align and connect the substrate 17 onto the support member 35 in the OE/IC packaging system 67, in which the optoelectronic device chip 19 has been assembled to the substrate 17 by packaging process. Pommer does not disclose the alignment keys between the substrate 17 and the optoelectronic device chip 19.

The guide rods 18 of the present invention differentiate from the guide pins 72 of Pommer in that the latter is held by the supporting block and is independent from the substrate 17, whereas the former is formed on the surface of the substrate 11 and is regarded as a part thereto.

Further, the substrate 17 of Pommer has the interior surface 22 (Para. [0141]) and exterior surface 18 (Para. [0142]). The optoelectronic component 19 is connected to the substrate 17 by the conductive bond 21 (Fig. 2b; Para. [0152]). Pommer does not disclose the alignment member on the surface of the substrate 17 and on the surface of the optoelectronic component 19. It should also be noted that the holes 71 are to allow the guide pins 72 to penetrate through (Para. [0223]). There is no equivalent alignment member disclosed by Pommer at all, in which the guide pins 72 are not the alignment keys 17 and 23 of the present invention as discussed above. The conductive bond 21 formed by flip-chipping is not the claimed alignment keys 17 and 23 of the present invention, either.

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5. With respect to claims 8 and 19, as discussed above, the guide rods 18 are formed on the surface of the substrate 11. The guide rods 18 are formed on the surface of the substrate 11 having the lens array 12 (see FIG 5). Differently, the guide pins 72 of Pommer are the separate element and held by the recesses 79 of the supporting block 70. The guide pins 72 are not on the surface of the substrate 17, as the way recited in claim 8 and 19.

6. It should be noted that the OE die 19 is flip-chipped to the surface of the substrate 17 (para [0273]; Fig. 16). This is a complicate packaging process. Even further, the electronic circuit 257 and the conductive trace 256 are connected to the OE device by the flip-chip bond process. Pommer does not disclose alignment member on optical active component 22 and the surface of substrate 17 of the present invention.

7. For at least the foregoing reasons, Applicants respectfully submit that independent claims 1 and 10 patently define over the prior art reference and should be allowed. For at least the same reasons, dependent claims 2-9 and 11-20 patently define over the prior art reference as well.

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CONCLUSION

For at least the foregoing reasons, it is believed that all the pending claims 1-20 of the invention patently define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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